

***Drepanidotaenia teshepkukensis* sp. n. (Cestoda: Hymenolepididae)
from Black Brant, *Branta bernicla nigricans*,
from the Teshepkuk Lake area of Alaska**

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ABSTRACT: Specimens of *Drepanidotaenia teshepkukensis* sp. n. (Eucestoda: Hymenolepididae) were recovered from 68 black brant, *Branta bernicla nigricans* at Teshepkuk Lake, Alaska. Of the species of *Drepanidotaenia* with 10 rostellar hooks *D. teshepkukensis* sp. n. is most similar to *D. barrowensis* and *D. bilateralis*, which also occur in black brant. It differs from these 2 species in shape and size of rostellar hooks, position of the reproductive systems relative to the lateral excretory canals, and shape and size of the cirrus spines. The new species can be distinguished from all other species of the genus in having the centers of the ovary and vitellarium immediately poral of the center of the most antiporal testis.

KEY WORDS: *Drepanidotaenia teshepkukensis* sp. n., Cestoda, Hymenolepididae, *Branta bernicla*, Alaska.

Black brant, *Branta bernicla nigricans* Linnaeus, 1758 are commonly found along the northern Pacific coastlines of Asia and North America. Eleven genera of tapeworms, including 2 species of the genus *Drepanidotaenia* Railliet, 1892, *D. barrowensis* (Schiller, 1952) Yamaguti, 1959, and *D. lanceolata* (Block, 1782) Railliet, 1892 have been reported previously from this subspecies of brant in North America (Neraasen and Holmes, 1975). A third species, *D. bilateralis* (Linstow, 1905) Railliet, 1892 has been found in *B. bernicla* in Russia (Linstow, 1905; Spasskaya, 1966). The purpose of this study was to provide additional information on the cestode fauna of black brant.

Materials and Methods

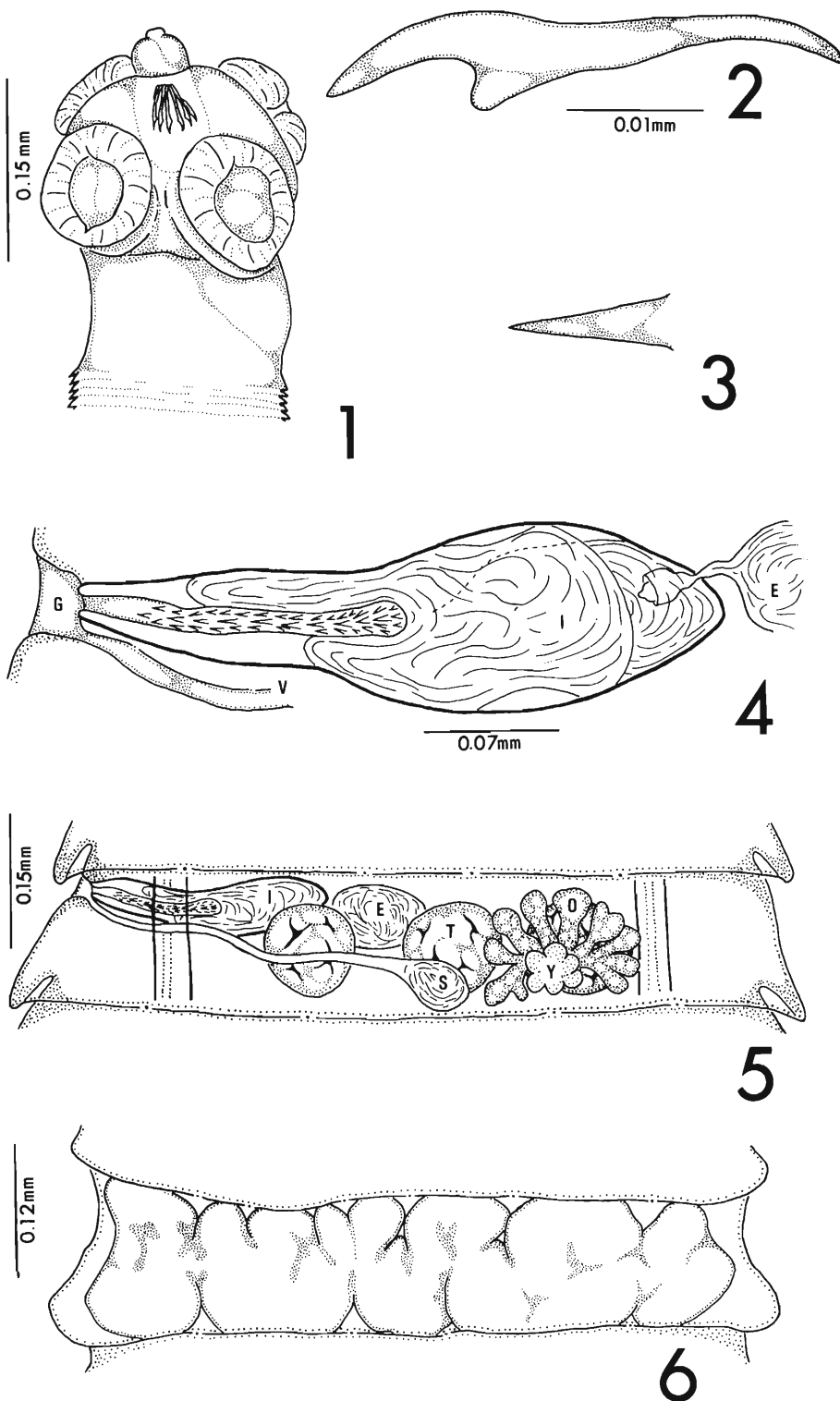
Cestodes removed from intestines of 68 black brant collected by netting and shooting from the Teshepkuk Lake area of Alaska from June through August from 1987 to 1989 were fixed without coverslip pressure in 10% formalin, stained in Semichon's carmine and mounted in Kleermount or Canada balsam. Some specimens were sectioned by conventional paraffin technique. Measurements were from whole mounts of adults and are given in μm , with the mean followed by the range in parentheses, unless otherwise stated. Type materials of *D. barrowensis* (no. 37341, USNM Helminthological Collection) were examined. No specimens of *D. bilateralis* were available for comparison.

Results

All black brant examined were infected with an undescribed species of hymenolepidid cestode of the genus *Drepanidotaenia*.

***Drepanidotaenia teshepkukensis* sp. n. (Figs. 1–6)**

DESCRIPTION (based on 20 specimens): With the characteristics of the genus. Strobila craspedote, total length of worms 16 mm (6–19), composed of 70–200 proglottids. Scolex 180 (140–220) long by 140 (105–200) wide. Suckers well developed, 70 (45–95) in diameter. Rostellum 65 (45–85) long with 10 hooks, arranged in a circle, each 33 (29–35) long with blade 7 (4–8) long, rostellar sac 109 (96–122) long by 49 (46–52) wide. Immature proglottids wider than long, mature proglottids 150 (100–280) long by 900 (400–1,500) wide. Genital atria unilateral opening in the anterior fourth of proglottids. Three testes 86 (62–114) long by 88 (70–110) wide arranged in a straight line. Cirrus sac 360 (285–500) long by 82 (45–115) wide. Cirrus 230 (145–300) long, armed with symmetrical, similarly shaped spines, largest situated near the base and middle of cirrus, 23 (18–27) long, and smallest at the tip, 5 (4–8) long. External seminal vesicle 150 (72–235) long by 88 (27–140) wide. Ovary antiporal, deeply lobed 90 (57–140) long by 130 (70–215) wide with its center situated ventrally, immediately poral of the center of the most antiporal testis. Vitellarium lobed, situated directly under the ovary, 47 (27–70) wide. Genital ducts passing between ventral and dorsal excretory ducts, excretory ducts outside reproductive organs, ventral canals 33 (30–41) wide, dorsal excretory canals 11 (10–13) wide. Vagina posterior and ventral to cirrus sac. Seminal receptacle 67 (56–78) wide. Gravid proglottids wider than long,



Figures 1-6. *Drepanidotaenia teshepkukensis* sp. n. from *Branta bernicla nigricans*. 1. Scolex. 2. Hook from rostellum. 3. Cirrus spine. 4. Enlarged view of genital atrium and seminal vesicle region showing the genital atrium (G), vagina (V), internal seminal vesicle (I), and external seminal vesicle (E). 5. Mature proglottid showing the internal seminal vesicle (I), external seminal vesicle (E), testis (T), seminal receptacle (S), vitellarium (Y), and ovary (O). 6. Gravid proglottid showing uterus.

150 (90–300) long by 1,300 (730–1,900) wide. Gravid uterus a transverse sac. Eggs ovoid, 28 (27–30) long by 34 (35–38) wide, oncospheres 19 (17–25) long by 23 (22–24) wide.

HOST: *Branta bernicla nigricans*.

SITE OF INFECTION: Small intestine.

LOCALITY: Teshekpuk Lake, Alaska (70°49'N, 153°15'W).

HOLOTYPE: USNM Helm. Coll. No. 82531.

PARATYPES: USNM Helm. Coll. No. 82533; Texas A&M Cooperative Wildlife Coll. No. 84-89AL, Department of Wildlife and Fisheries Sciences, Texas A&M University and The University of Nebraska State Museum No. 35446, The Harold W. Manter Laboratory, University of Nebraska.

ETYMOLOGY: The species name refers to the largest lake in the area where specimens were collected.

Discussion

Of the species of *Drepanidotaenia* with 10 rostellar hooks, *D. teshekpukensis* sp. n. resembles both *D. barrowensis* and *D. bilateralis*, which have been reported previously from black brant (Neraasen and Holmes, 1975; Spasskaya, 1966). In both *D. barrowensis* and *D. bilateralis* the ovary can be substantially overlapped by the antiporal testis, however, in both of these species the center of the ovary is always situated antiporal of the most antiporal testis (Schiller, 1952; Spasskaya, 1966). The new species can be distinguished from all described species of *Drepanidotaenia* because the center of its ovary is consistently situated immediately poral of the center of the most antiporal testis.

The new species differs from *D. barrowensis* in that it has a shorter total length, 16 mm, as compared to 70 mm reported by Schiller (1952) and 90 mm reported by Spasskaya (1966); its scolex is larger, 180 long by 140 wide, as compared to 72 long by 96 wide (Schiller, 1952) and 105–115 wide (Spasskaya, 1966); its rostellar hooks are longer, 33 (29–35) long, as compared to 22 long (Schiller, 1952) and 21–23 long (Spasskaya, 1966); it has a longer cirrus, 230 long as compared to 140 long (measured from type material from USNM Helm. Coll.); it has larger and more symmetrical cirrus spines, largest spines 23 (18–27) long, as compared to 8–10 long (Schiller, 1952) and 2–13 long (Spasskaya, 1966); it has smaller testes, 88 (80–91) wide, as compared to 129–144 wide (Schiller, 1952) and 150–220 wide

(Spasskaya, 1966); its external seminal receptacle is more spherical; its ovary is smaller, 130 (70–215) wide as compared to 330–440 (Spasskaya, 1966) and does not extend laterally past the excretory canals; it has a smaller vitellarium, 47 (27–70) wide, as compared to 72 wide (Schiller, 1952) and 111–140 (Spasskaya, 1966); and its uterus is a uniform transverse sac lacking the antiporal expansion described by Schiller (1952).

The new species differs from *D. bilateralis* in that it has a shorter total length, 16 mm, as compared to 68 mm (Linstow, 1905; Spasskaya, 1966); its scolex is smaller, 180 long, as compared to 220 long (Linstow, 1905; Spasskaya, 1966); its rostellar hooks are shaped differently, having a proportionally smaller blade that is approximately 20% of the total length of the hook, as compared to approximately 38% (Spasskaya, 1966); its ovary is smaller, approximately $\frac{1}{2}$ of proglottid width, as compared to $\frac{1}{3}$ of the proglottid width (Spasskaya, 1966); its excretory canals are outside of the region occupied by the reproductive organs, rather than being more medially situated (Spasskaya, 1966) and its cirrus sac and vagina pass between the ventral and dorsal excretory ducts, rather than their being positioned ventral of the cirrus sac (Spasskaya, 1966).

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